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AUTHOR Ireson, Judith M.; Shields, Maureen
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ABSTRACT

The purpose of this study was to trace the development of children's understanding of emotions between the ages of 4 and 12. Twenty-four children at each of five age groups (4, 6, 8, 10, and 12), equally divided by sex, served as subjects. Three groups of tasks were administered: (1) the recognition of facial expressions from photographs, (2) the identification of target emotions contextualized in stories, and (3) the elicitation during conversation of children's accounts of situations which provoked emotions in themselves and in adults. Particularly emphasized were the differences in responses between the various age groups. The results maintained the grounding of emotion in the appraisal of situations and indicated that the understanding of situation increased with the growth of experience in children. The study suggests that, if the development in children's understanding of emotion as an organized construct is to be investigated seriously, both their knowledge of situational factors and of internal psychological factors should be considered jointly to ascertain if and how these factors change with age and how they interact. (DST)

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THE DEVELOPMENT OF THE YOUNG CHILD'S REPRESENTATION OF EMOTION

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Summary of the investigation funded by ESRC grant No C00 23 2109

Judith M Ireson, and Maureen M Shields,
Department of Child Development and Educational psychology
University of London Institute of Education,
25 Woburn Square
LONDON WC1H OAA

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Aims of the project

The main aim was to trace the development of children's understanding of emotions between the ages of 4 and 12. It arose out of a need to investigate further an apparent finding of an earlier piece of research (Shields & Duveen, forthcoming) which showed that when questioned about human emotion 3 and 4 year old children did not distinguish sad and angry feelings very well, though they could unanimously identify happiness. Anger and sadness seemed to be part of an 'upset state' which was only beginning to differentiate clearly at 5. Just over a third of the children could not differentiate a drawn representation of an angry face, and labelled it sad. The same age children, however, could easily distinguish between sad and angry expressions when provided with a label. It was planned therefore to test a group of child subjects in both labelling and comprehension tasks and to include cross-matching of facial expressions between different sex and different age of photographic subject. It was also planned to extend the age range upwards, testing at 4, 6, 8, 10 and 12 to chart the development of the ability to read emotion in faces. In addition it was proposed to test children's ability to identify emotions contextualised in stories and to ask children about their own experience of each emotion and their observational knowledge of the same emotion in adults, and to consider their responses developmentally from 4 to 12.

Methodology

Sample. It was initially proposed to study 24 children, equal numbers of girls and boys at five ages, 4, 6, 8, 10 and 12. This sample was enlarged for the photo-tasks to 32 for statistical reasons. All 160 children were drawn from London schools and their father's occupations fell within the Registrar General's Classes III & IV i.e. upper and middle working class. All children were from English speaking homes. In addition, 32 postgraduate students of the University of London participated in some of the photo-tasks.

Areas of Investigation. There were three main groups of tasks: (a) the recognition of facial expressions from photographs, (b) the identification of target emotions contextualised in stories and (c) the elicitation during conversation of children's accounts of situations which provoked emotions in themselves and in adults. The materials and procedures for each task will be dealt with when the tasks are described.

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1. The Recognition of Facial Expression in Photographs

i. Materials

A set of 28 photographs of seven emotions posed by four models, one man, one woman, one boy and one girl were selected from 288 taken by machine driven camera. Models posed the expressions of happiness, sadness, fear, anger, disgust, surprise, shame, contempt, pride, boredom, interest, jealousy and neutrality and several photographs of each expression were taken of each model. The models were not actors or Ekman-trained face pullers and were responding to verbal requests or prompts. A selection of the 70 photos considered by the investigators to best display the target emotions were presented to a panel of 18 judges along with a list of the 13 emotion terms and the judges were asked to select the most appropriate term for each expression. Expressions of contempt, pride, boredom, interest, jealousy and neutrality were discarded at this stage either because agreed identification was low or because sets of photos for a particular model were incomplete. Expressions that were agreed upon well by the judges were retained and some retakes were made; the final set of 28 photos (seven expressions of each of four models) was given to another group of 30 adults who selected the most appropriate term for each expression from a list of seven emotion terms. Agreement of the judges was 76% over all expressions, ranging from perfect agreement on the happy expressions to 59% agreement on the expressions of anger.

ii. Subjects

As above.

iii. Procedure

The children were interviewed individually. They were told that we were interested in finding out whether children could tell what people were feeling by looking at their faces. Each child then performed four tasks.

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Matching: One set of seven photographs posed by one of the four models (a man, a woman, a boy or a girl) was placed on the table in front of the child and the model was named. The child was presented one by one with a second set of identical photos and asked to match them to the tabled set. As the majority of children matched perfectly, the adults were not asked to do this task.

Labelling (Production): The child was asked 'What do you think Gerard (man), Hilary (woman), Darren (boy) or Laura (girl) is feeling when they look like that?' or a close paraphrase. The photos were pointed to in a random order.

Cross-matching: The set of tabled photographs was replaced with another set and the child was asked to match these to a different set across either age or sex.

Comprehension: The seven photographs first presented were set out again and the child was told that she was being shown the same photos again because we wanted to check on how well the model had done what we asked, and she was then asked to point to the appropriate photograph in response to the question 'Which photograph shows (model's name) feeling (happy, sad etc.)?

iv. Experimental Design

Four boys and four girls in each group were randomly allocated to a photo model group (man, woman, boy or girl). They performed the matching, labelling and comprehension tasks using the photographs of this model, but were given two different models to cross-match. For this reason the cross-matching task was analysed separately from the other three tasks.

Half of the 4, 10 and 12 year old children and half of the adults cross-matched two models of the same sex but different age, while half matched two models of the same age but different sex.

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v. Results

There was no significant school effect and the data were therefore combined. A 4-way analysis of variance of the children's data with age (5 levels), sex (2 levels), and photo model (4 levels) as between subject variables and tasks (3 levels) as a within subject variable revealed main effects for:

age ($F_{(4,120)} = 8.52$, $p < 0.0001$),

photo model ($F_{(3,120)} = 6.60$, $p < 0.01$),

and task ($F_{(2,120)} = 352$, $p < 0.0001$), and

an interaction between task and photo model ($F_{(6,120)} = 2.38$, $p < 0.05$).

Follow up tests on the age variable revealed significant differences only between the 4 and 6 year olds, while those on the photo model revealed significantly more 'correct' responses to the adult female (Hilary) than to the other three models (Tukey tests, $p < 0.05$). The matching task was performed significantly better than the comprehension task which in turn was performed significantly better than the labelling task (Tukey tests $p < 0.05$), and this is illustrated graphically in figure 1, on which the means for the cross-matching task are also plotted, consistently intermediate between the comprehension and labelling tasks. The task by photo model interaction arose from the ability of the children to perform the matching task equally well regardless of model, whereas in the comprehension and labelling tasks, the adult, Hilary, was responded to with greater accuracy than the other models. The contrast between Hilary and the other models was highly significant ($F_{(1,151)} = 18.57$, $p < 0.001$). A further analysis of variance including the adult data but omitting the matching data, supported the above interpretation and the interaction between photo model and task disappeared. The preliminary analysis of the primary school children for a school effect threw up an interaction between the sex of the child and the sex of the photo model which will be considered in more detail in the following sections.

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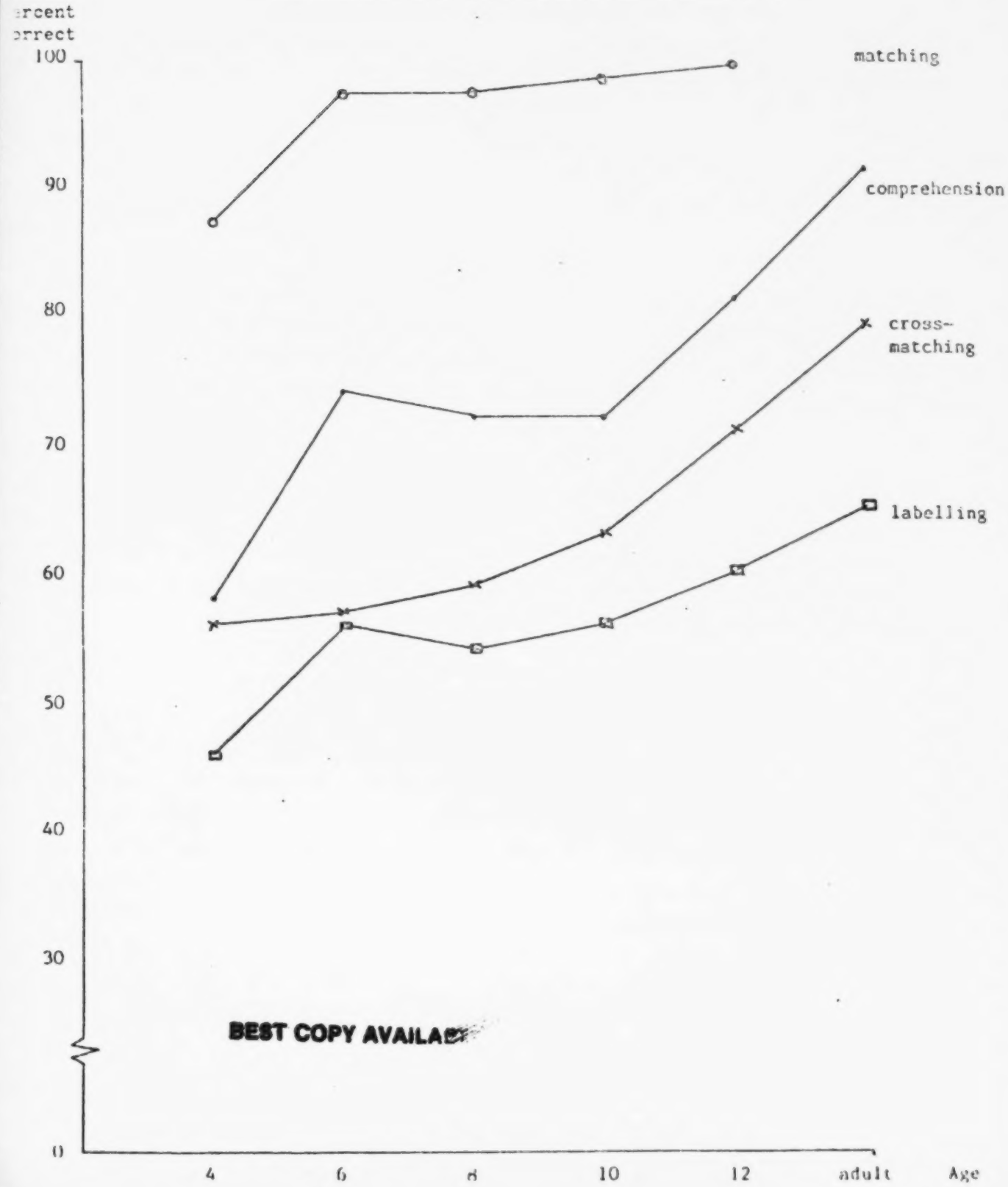
Figure 1

Percentage of correct responses by age and task



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vi. Analysis of the Comprehension Task

In addition to the improvement with age in children's ability to pick the appropriate expression from an array (comprehension), there was also differential improvement according to expression (Figure 2). The happy expressions were selected with 100% accuracy by age 8, but there was improvement with age for fear, anger, disgust, shame and surprise, the last being the most marked. Sad expressions were no more correctly selected by adults than by 4 year olds.

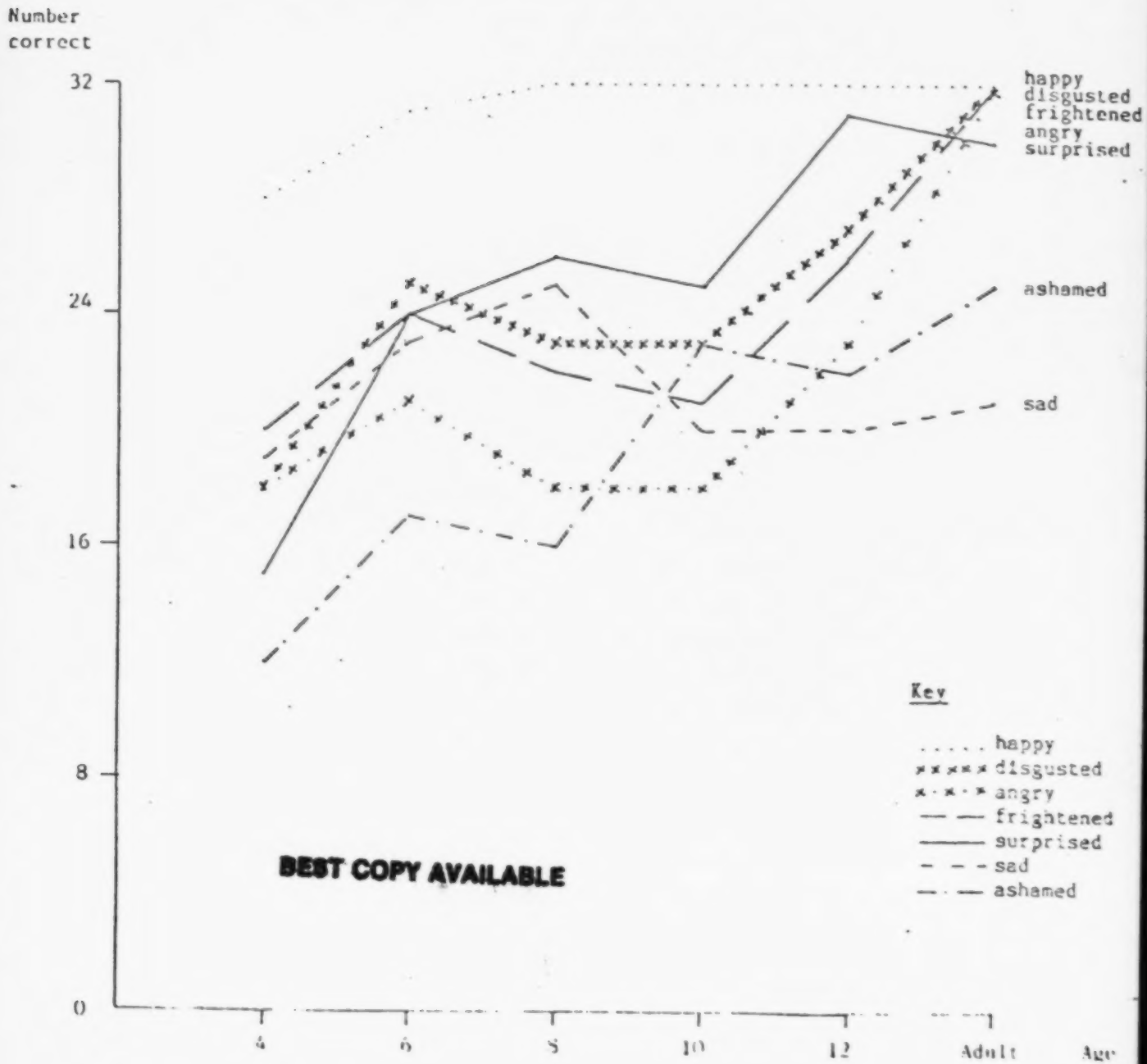

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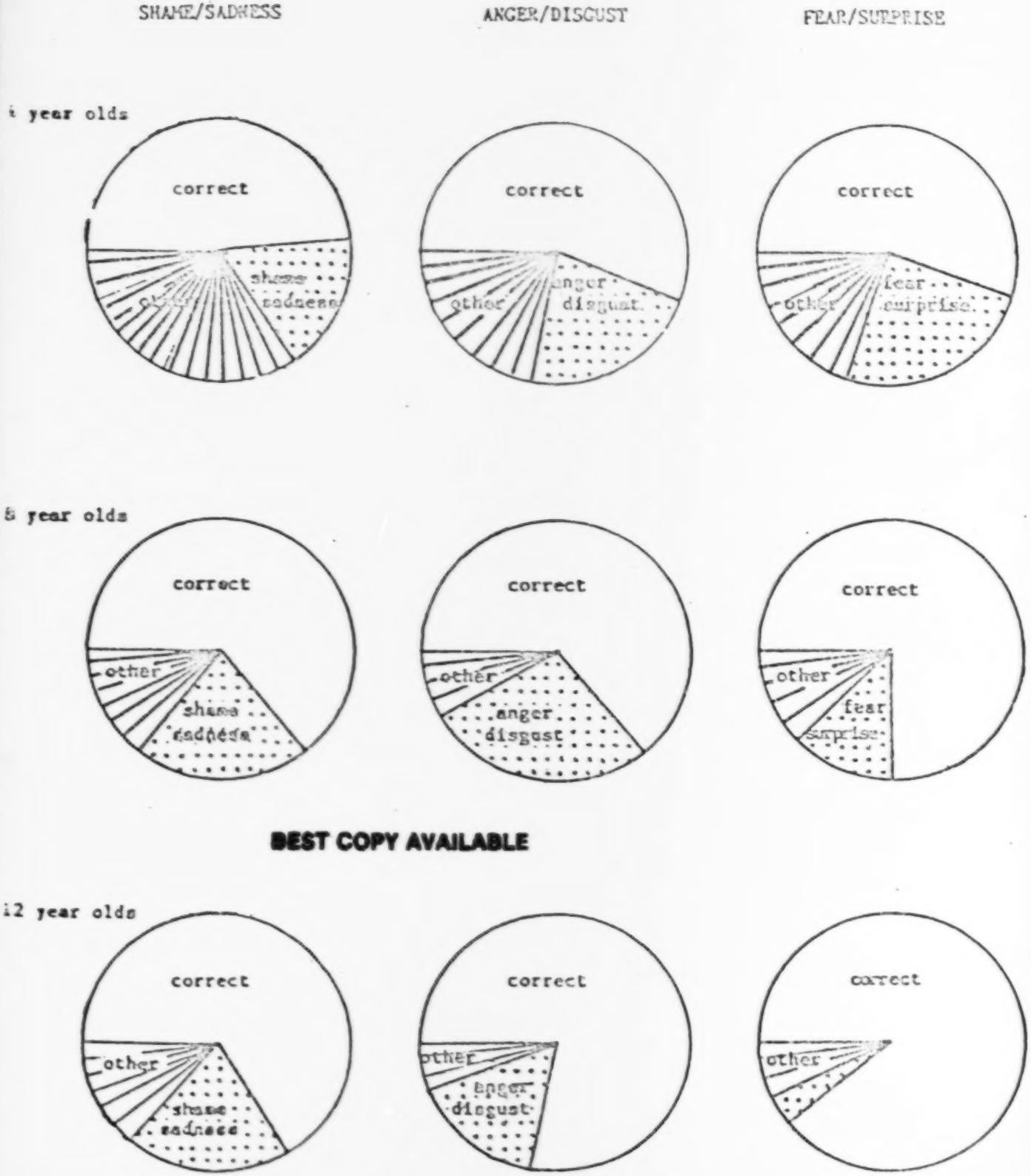
Figure 3 Common Confusions
Proportions of correct choices, confusions and other choices in the comprehension task



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An analysis of the errors made in the comprehension task revealed consistent tendencies to make particular errors, or common confusions. Anger was most frequently confused with disgust, sadness with shame and fear with surprise. The pie charts in figure 3 illustrate the extent of the common confusions. Four year olds, as well as being less likely than six year olds to pick the target expression, were more likely to select an expression which was not one of the confusion pair. It was not until 12 years that there was any drop in the percentage of common confusions, and this in respect of the anger/disgust and fear/surprise pairs; adults, whose selections were nearly perfect, still made some confusions between the sad and ashamed expressions.

vii. Analysis of the Labelling (Production) Task

Scoring the responses to the labelling task posed most difficulty. Following Izard (1971) paraphrases and situational definitions were accepted, for example, 'a bit down' and 'something dead' were accepted for the sad expression but 'thinking' was not. The most numerous paraphrases were offered in the labelling of shame and the most common near misses captured the thoughtfulness of the expression and the subdued affect in words like 'thinking', 'miserable' and 'remembering'. The same confusions as in the comprehension task were evident but to a lesser extent. The 4 year olds said more frequently than the older children that they didn't know what the model was feeling. Very few children suggested any positive emotion terms for the sad, angry, disgusted, frightened or ashamed expressions; a few suggested 'laughing' and 'jolly' for the surprised expressions.

The impression given by figure 1 of a smooth progression with age fades when responses to each emotion are considered separately. Figure 4 reveals that the age effect is largely a result of the increase in correct labelling of surprise and shame, with some contribution also from fear.

A 3-way analysis of variance (age x sex x sex of model) of the labelling scores revealed an interaction of the sex of the child with the sex of the photo model with a tendency for the children to be more accurate when labelling models of the opposite sex than when labelling models of their own sex ($F_{(1,168} = 4.57$, $p < 0.05$). This was more markedly the case for boys than for girls.

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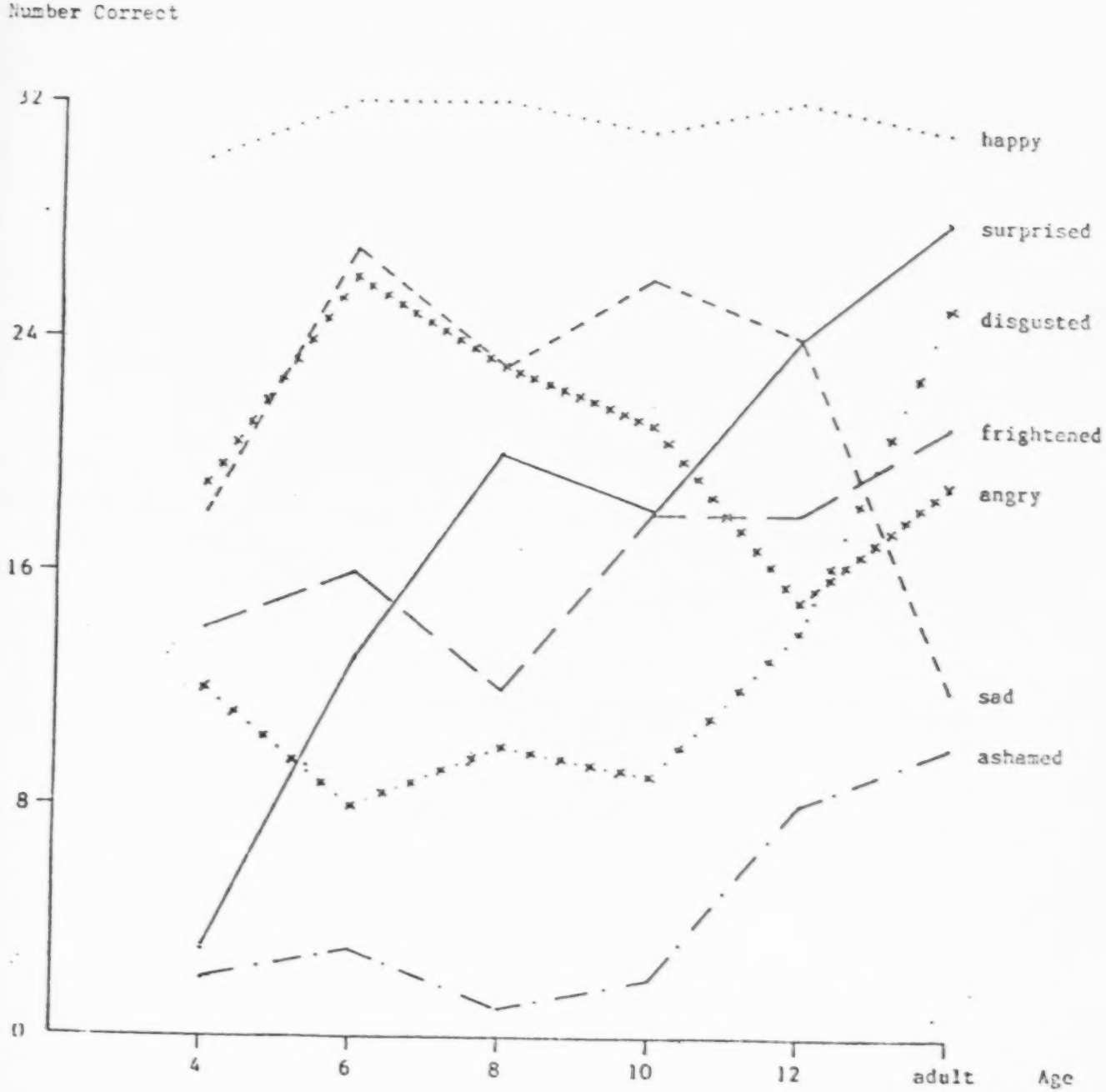
Figure 4

Numbers correct for each emotion in the labelling task



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viii. Analysis of the Cross-Matching Task

Analysis of errors revealed the same common confusions as in the comprehension task with only one addition, that when given the angry expressions, there was a greater tendency on the part of the children to select the ashamed expression than the disgust expression. There was no indication that this confusion resulted from any particular combination of models matched.

A 3-way analysis of variance (age x sex x type of match) of the scores of the 4, 10 and 12 year olds and adults showed main age effects for age ($F_{(3,2)} = 6.57$, $p < 0.01$) and type of match ($F_{(1,2} = 7.08$, $p < 0.01$). The matches of two models of the same sex but different age were performed more successfully than the matches of two models of the same age but opposite sex within each of the four age groups. There was no significant difference according to which set of photographs was displayed on the table and which was matched.

2. The Story Task

This was administered immediately after the photo-tasks except in the case of some 4 year olds who needed the interview phased more slowly. The story task had three main aims: (a) to see if there was an age gradient in the ability of children to recognise the emotions of target characters in stories; (b) to compare the ability of children to recognise situated emotions with their ability to recognise emotions in faces and (c) to explore the extent of children's own experience of emotions, and their observational experience of adult emotions. Eight emotions were chosen for investigation: Disgust, Anger, Pride, Shame/guilt, Sympathy/kindness, Fear, Sadness, Jealousy.

Method

(a) Sample. The children were a sub-sample of those who had done the photo-test. The photo-test sample had been enlarged to 32 for statistical reasons, and for the stories the original sample of 24 in each age group, 4, 6, 8, 10, and 12 was used. To avoid prolonging the interview, each child was questioned on four stories only, so each emotion had twelve respondents, equally divided between girls and boys.

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(b) Materials. The stories presented to the children aged 4-10 were based on line drawings which were displayed as the story was told. The sex of the target child in the story matched the sex of the subject. The stories presented to the 12 year olds who were in secondary school were based on a written text which was more elaborate than that used with the younger children. As the elaborated versions differed in some respects from the stories for the younger children, a further set of variants was tested with ten other 12 year old children to see how far the responses differed in accordance with the story.

The content of each story is briefly outlined below.

1. DISGUST (Age 4-10) A child bites an apple and finds maggots. (3 pictures)
   (Age 12) variant 1. Child reaches through a hole in a fence to retrieve a ball and gets dog muck on his/her hands.
2. ANGER A child lends his/her bike to a friend and the friend smashes it up. (1 picture)
3. PRIDE A child wins a swimming competition, is awarded a medal and stands on the podium for applause. (1 picture)
4. SHAME/ GUILT (Age 4-10) Child breaks expensive toy, and blames sib who is told told off. (3 pictures)
   (Age 12) variant 1. A child carelessly gets wet paint on his/her jacket sleeve and runs upstairs leaving a trail of paint on the newly decorated hall and staircase. Child then conceals own jacket, puts paint on sibling's jacket who is then told off and punished.
   variant 2. Feeling that the abrupt emergence of guilt in the 12 year olds might be due to the shock/horror effects of damage to parental property, the variant story in which a child damages his/her Walkman carelessly and then accuses sib was tried on another 12 year old sample.
5. SYMPATHY/ KINDNESS (Age 4-10) Child witnesses friend hurt him/herself in a bicycle accident and takes him/her home to be looked after.
   (Age 12) One of two friends running off to a fair falls and is badly cut on broken glass. Friend accompanies injured child to hospital and misses fair.
6. FEAR (Age 4-10) Child is tucked up in bed, but wind blows over bedside lamp. Child wakes suddenly, tree outside has ambiguously monstrous shape. (3 pictures)

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(Age 12) Children going home discuss local mugging. One child has to pass through dark passage between buildings. He/she hears footsteps approaching from behind.

7. SADNESS — Pet dog runs into road and is accidentally killed by car. (3 pictures)

8. JEALOUSY/ENVY — (Age 4-10) Grandparents visit and give gift to sib, but not to target child. Parents buy shoes for sib and not for target child.
(Age 12) variant 1. New child comes to live in street where two best friends live. One friend pals up with new child, and stands old friend up to go out with him/her.
variant 2. Two sibs visit grandparent, and grandfather's coveted camera is asked for and given to one of them (family rather than peer group setting).

Any differences produced by varying the story will be discussed during consideration of the results.

(c) Procedure. The child listened to the story, and was then asked:

(i) What does X feel? (1st spontaneous response)

(ii) Could he/she feel anything else? (2nd spontaneous response)

(iii) Two other possible adjacent emotions were mentioned and the child asked, Could he feel X or Y? (elicited responses)
The adjacent emotions were as follows: Disgust (frightened, surprised); Anger (frightened, sad); Pride (happy, shy) Ashamed/guilty (frightened, happy); Kind/sympathetic (frightened, proud); Fear (sad, cross); Sadness (cross, frightened); Jealousy (cross, sad).

(iv) Finally if the child had not mentioned target emotion or synonym, he/she was asked, Could X feel, or be feeling, proud, disgusted, ashamed, etc.

The adjacent emotions were mentioned to explore the direction of diffusion of the target emotion, and were selected as possible in relation to the story, produced in pilotage, and in the case of Shame/guilt to distinguish those who were happy to shift blame to someone else, and those who felt that false accusations were wrong. The children were allowed to talk freely within the time limits of the interview and the story task was taped and transcribed.

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Results

(a) Children's identification of the target emotion in the story

In considering the children's responses account had to be taken of the fact that children's language differs from adult language and even more from conventional research-speak. There were, for instance, very few spontaneous mentions of disgust (7) pride (16) shame/guilt (8) sympathy/kindness (1) or jealousy (7), but children used various combinations of familiar terms such as angry, sad, frightened or paraphrases of various kinds to convey the flavour of the emotion. Children also tended, especially after 8 years, to give complex responses with two or more terms. If the terms were more or less synonymous, e.g. annoyed and angry, they were counted as a single response, if they contained another emotion e.g. angry and sad, each emotion was counted separately.

Table 1 (over) contains the results for the five emotions which were relatively unproblematic, and which show almost no developmental gradient, especially in the age range 6-10. The main exception to this was the tendency of the 12 year olds to introduce complex and qualificatory responses, especially in the case of pride, sadness and anger. The two other noteworthy gradients are in fear, where the 4 year olds only made two target responses, and seemed to favour sad and angry as alternatives. This may be either because fear is not well differentiated from a generalised upset state, or because upset state at that age often entails tears which the children interpret in a Jamesian way as sadness, or because fear is a less familiar emotion owing to the protection given to children. The other is in sympathy/kindness, where a rather complex story of the child witnessing an accident and then going to the rescue was used. There was therefore a biphasal reaction (a) the feeling and (b) the helping action. As Table 1 shows there is an abrupt transition between 10 and 12 towards the action or helping side.

These five emotions appear well differentiated with regard to the main core of the emotion. The diffusion towards other emotions is limited. Surprise becomes connected with pride in achievement at 8 and is de rigueur at 12 reflecting cultural or subcultural repudiation of being over confident, brash, full of oneself or conceited. The older children may also be more conscious of the fine line which can separate success from failure in a competitive world.

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Table 1. Children's identification of target emotion in stories. No of children producing target emotions in the 1st spontaneous response and other emotions mentioned in the 1st and 2nd spontaneous responses. (N = 12 in each age group)

Age	PRIDE		SADNESS		ANGER		SYMPATHY/KINDNESS				FEAR	
	1st resp. happy, proud	other emotions	1st resp. sad, depressed	other emotions	1st resp.	other emotions	1st resp. feel for	help	T.	other emotions	1st resp.	other emotions
4	10	-	11	scared 1	8	sad 3	8	2	10	happy 1	2	sad 5 anger 3
6	12	strong 1 thankful 1	12	guilty 1 angry 1	12	sad 5	10	-	10	cross 1 ashamed 1 struck dumb 1	9	sad 5 surprise 1
8	12	surprise 3	12	fear 2 guilt 2	12	sad 8 surprise 1 disgust 1	10	2	12	-	12	surprise 1
10	12	surprise 2 relief 1	12	fear 5 guilt 2	11	sad 5 fear 1	8	2	10	fear 1 not scared to help 1	12	surprise 3
12	11	surprise 5 shock 2 fear 1 nervous 1 embarrassed 1 sad 1 relief 1	9	fear 6 anger 3 guilt 2 shock 1 harried 1 sulky 1	12	sad 6 fear 7 surprise 1 disappointed 1	1	10	11	guilt 1	12	surprise 1 lonely 1
	57 95%	surprise 11 shock 2 fear 1 nervous 1 embarrassed 1 sad 1 strong 1 thankful 1	56 93%	fear 14 guilt 7 anger 5 sympathy 1 harried 1 sulky 1 (= indignant)	55 92%	sad 27 fear 8 surprise 3 disgust 1 disappointed 1 alright 1	37	16	53 88%	guilty/ ashamed 2 cross 1	47 78%	surprise 6 anger 3 lonely 1

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The guilt and fear connected to sadness may be a story effect for failing in responsibility towards a pet dog who is killed. Anger seems to have a marked tendency to diffuse towards sadness. This may be a story effect because anger towards the doer of the damage might be combined with sadness about the damage to the bike. On the other hand, this diffusion may have deeper roots, as anger without opportunity for action can easily turn into depression or sadness. It may be that both anger and sadness are differentiated out of a more general upset state, and retain their connection which is also present in the language of emotion which children may hear which often makes an equivalence between the two emotions: 'It makes me sad when you do that.'

Second spontaneous responses and elicited responses.

The testing of this diffusion by the 'What else could s/he feel?' question and by specific elicitation of responses to two other suggested emotions does not markedly change the picture (Table 2). The question 'What else could s/he feel?' produced a response from about half the children, frequently in the shape of a synonym of the target emotion. In the case of the two suggested adjacent emotions, the children themselves pre-empted the suggested emotion in the case of pride where the children spontaneously picked out the elation of the emotion by using 'happy' in their responses. In the case of shame/guilt, the children also used 'happy' to express the relief of getting out of trouble by shifting the blame. Sadness as a suggested emotion was also pre-empted by the children in the case of jealousy. Less than half the children responded to the elicited emotions by accepting them.

The low rate of response to the ancillary questions may be due to the children having shot their bolt in the first answer, or to children's difficulty in envisaging concurrent emotions (Harter 1980), or to children's sensitivity to the transition from conversational discussion to interrogation. Sadness was the emotion with the greatest apparent diffusion towards both anger and fear, and fear was the emotion with the least diffusion. This is probably due to story context effects where the accident to the pet involved a blamable agent.

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Table 2. Responses to question 'What else could s/he feel?' and the elicitation of two adjacent emotions
N = 60, all ages together

Emotion	2nd spontaneous response	Reaffirmation of target	Acceptance of suggested adjacent emotions	
	No of subjects responding	No of responses	No of subjects accepting	
Disgust	25	8	surprise accepted	29
			fear accepted	13
Anger	33	10	sad accepted	27
			fear accepted	13
Pride	32	10	shy accepted	29
			happy pre-empted	
Shame/ guilt	23	7	fear accepted	21
			happy pre-empted	
Sympathy/ kindness	16	14	fear accepted	21
			proud to help	27
Fear	25	14	anger accepted	18
			sadness accepted	13
Sadness	23	10	anger accepted	31
			fear accepted	22
Jealousy	30	11	cross accepted	12
			sad pre-empted	

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The three emotions which were problematic, in contrast to the five already examined, were Disgust, Shame and Jealousy.

Disgust.

The revulsion against obnoxious and aversive food substances is a genetically programmed reaction, though what counts as aversive within a culture is only partially based on individual reactions to smell and taste which become rapidly embedded in culturally developed food customs and cleanliness norms. The two stories used each reflected one of these sets of norms. In the literature on facial expression (Ekman 1982, Izard 1971) disgust is linked with contempt because contempt appears to use the raising and curling of the upper lip and wrinkling of the nose as part of its facial convention. Disgust as revulsion from smells and substances is however only tenuously associated with contempt which is an emotion wholly based on a conviction that the individual or behaviour falls below some complex system of evaluated norms by reason of some deficiency of character or judgement. The original genetically programmed reaction has at this stage become diffused into anger and dislike.

As we have said earlier, disgust is not a term used by children, the nearest equivalent being 'yuk' or horrible. These and other synonyms and periphrases such as nasty, sick, terrible, were grouped together as indicating a grasp of the target emotion. The results are shown in Table 3 below.

The pattern of responses diverges somewhat from the pattern of the five well established emotions. One reason for this is that after 6 the term 'yuck' passes out of use, probably under social pressure at home and school, and the basic revulsion feeling seems to become more diffuse with a move towards anger (18 mentions) surprise (9) and shock and fear (9). Just over 61% of the subjects respond in the target category. It may be that we are looking at the dilution and diffusion of one of the primitive 'feels' which free the expressive element in it for wider uses.

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Table 3. First and second spontaneous responses to disgust story

Age	No	Disgust, horrible, nasty etc 1st response	Other emotions 1st & 2nd responses		
4	12	10	anger	1	
			sad	1	3
			happy	1	
6	12	9	anger	3	
			sad	2	6
			surprise	1	
8	12	6	sad	5	
			anger	3	9
			fear	1	
10	12	10	anger	3	
			surprise	1	4
12	12	5	anger	7	
story version 1			surprise	5	14
(dog muck on hands)			shame	1	
			sad	1	
12	10	3	fear	6	
story version 2			shock	2	
(maggots in apple)			sad	3	15
			surprise	2	
			anger	1	
			dbt eat again	1	
total	70	43			
%		61%			

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If disgust and revulsion lose their specificity as the children develop, the emotions of shame and jealousy follow a somewhat different course. Both of these are emotions which depend heavily on cognitive schemes for their specificity. Shame/guilt requires the internalisation of a commitment to behavioural norms, and jealousy depends on developed expectations about social relationships. Both in this task and in the retailing of children's own experiences these two emotions are less well discriminated and understood.

Shame/guilt

The story for shame was based on a child doing damage and then shifting the blame to another. This was aimed at the transition between shame which is connected with public exposure, and guilt which is based on an inward appraisal of one's own conduct, but as the words 'guilty' and 'ashamed' have semantically partially overlapping fields the word 'ashamed' was used in asking the children about their own experiences. 'Happy' was planned as one of the two elicited emotions, but as it turned out, so many of the children opted for it in their responses that it was dropped, and as so few children mentioned shame and guilt in their responses, they were asked specifically whether it was a possible emotion in the story context.

The story variant may have had some effect at age 12 and the results for both versions, damage to parents' property, damage to own property and false accusation of sib are presented in Table 4.

The majority of the children recognised shame as a possible feeling but it was not one they spontaneously chose. This may have been an effect of the story where the damage was to the child's property albeit an expensive toy or in the case of variant 2 a walkman. Guilt may be strongly associated with the scale of the damage and the enormity of the offence, children's possessions being less important than the newly painted hall and staircase in variant 1. The feeling of 'glad to get off' when someone else is accused may outweigh the guilt of making a false accusation. Varying the story might produce more guilt identification at an earlier age. However the shift to recognition of guilt at age 12 is clear in responses to both versions and this may reflect a developmental gradient in the internalisation and especially the commitment to norms of behaviour which the younger children with their blithe attitude to shifting the blame have not yet developed, even though they might acknowledge shame as a possible emotion for the story's target character.

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Table 4. 1st spontaneous and 2nd spontaneous responses together with elicited responses

Age	No	guilty ashamed cross with self, naughty (1st response)	other negative (1st & 2nd responses)	mixed feelings	happy 1st response	other positive	shame accepted on elicitation
4	12	2	angry 4 sad 2		3		6
6	12	1	angry 3 sad 2 fear 1	happy/angry 1	6		10
8	12	1	sad 1	angry/sad 1	9	strong/brave 1	10
10	12	1	sad 2 angry 1	happy/sad 3 good/bad 1	7	surprise 1 proud 1	8
12 (variant 1)	12	8	sad 7 fear 4 surprise 2		0	happy 4	6
12 (variant 2)	10	6	sad 3 angry 1 fear 1 stupid 1		4	proud 1 relieved 1	4
Total	70	19			29		44
%		27%			41%		63%

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Jealous/envious

These are distinguishable as appraisals of emotion in adult usage, but it was found during pilotage that young children did not seem to recognise partial favour to another unless it was embodied in something concrete. This may be a disadvantage of the picture story form. Jealousy was not in the active vocabulary of the children who described the emotions of the target child in the story mainly in terms of sad and/or angry feelings.

Table 5. Children's responses to jealousy story
Raw scores of 1st spontaneous responses and
responses to elicitation of jealousy as acceptable term

Age	No	jealous mentioned alone or in combined responses	sad, upset left out	angry	combined	other	jealous accepted on elicitation
4	12		8	3			6
6	12		10	2		didn't like father & mother	7
8	12	1	9	1	sad/lonely		4
10	12	2	5	1	sad/angry 3 sad/ left out 1		12
12	12 1st variant (peer setting)	2	2	4	sad/angry 1 lonely/ sad/upset 1 cross/jealous/ upset 1	let down	10
12	10 2nd variant (family setting)	2	4	3	angry/ upset 1 sad/ jealous 1	put out	5
Total	70	7 single mention 5 (7%)	38 54%	14 20%	10 14%	3 4%	44 63%

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It is notable that sad, lonely, upset and left out provide one component of each of the combined responses. If these are added to the other 'sad' answers, this forms a total of 46 responses in this category, so that 66% of the responses mention sadness. Anger was part of 18 responses. The second responses are not included in the above table because, although they show a shift towards anger (16 responses versus 12 for sadness), they otherwise do not alter the picture.

Jealousy is one of the emotions most frequently attributed to children who show anger or sulk as a result of upsets in parent-child-sibling relationships. These results show, however, that jealousy as felt is not the same as jealousy as ascribed. What is felt is sadness and anger alone or in combination. The term jealousy does not describe a distinctive emotion, but describes particular situations in interpersonal relationships where anger or sadness is felt because the relationship is understood to embody expectations and rules which are being violated. The development of the social understanding which embodies these rules is a lengthy process, and the psychological talk about sibling jealousy embodies the sophisticated understanding of psychologists and does not pick out some distinct emotional feel in the children.

Complex responses

Increasing complexity of response is a feature of the answers as the children get older, and this is especially evident between the ages of 10 and 12, where the triple or multiple response is as frequent as the single response. This appears to be caused by the growth of a more finely shaded view of emotional reactions. Even by 6, however, children are mentioning more than one emotion in their responses.

Table 6. No. of different emotions in complex responses to the identification of emotion in stories. Raw scores.

Age	1 emotion	2 emotions	3 or more emotions	D.K. etc	Total
4	76	9	-	11	96
6	64	30	2	-	96
8	45	47	3	1	96
10	50	44	2	-	96
12	27	42	27	-	96
	262	172	34	12	

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3. Children's own experience of emotions and their observational experience of adult emotion

After the children had completed the story task they were asked about their own and adult's experience of six of the eight emotions investigated. This reduction was to curtail the length of the interview to one which the schools and the younger children could accommodate. The emotions selected were: anger, pride, shame, fear, sadness and jealousy. The children were asked:

(i) Do you ever feel angry, proud, ashamed etc?

(ii) What makes you feel angry etc?

(iii) Do grown up people ever feel angry etc?

(iv) What makes them feel angry etc? In the case of anger the children initially concentrated on adult anger with children and so a supplementary question was asked:

(v) Do grown up people ever feel angry about other things or only with children?

(vi) What other things make them angry?

Six emotions responded to in each age group by 12 children would yield 72 responses for children's emotions and another 72 for adult emotion. Not all children, however, were able to give instances of each emotion, and some, especially the younger ones, denied that they or adults known to them actually experienced some of the emotions. There were 187 responses which were denials, don't knows, or inability to cite an instance but these were unevenly distributed as between age groups, as between emotions, and as between child and adult instances.

Table 7. Incidence by age of responses of denial, don't know and inability to recall instances. Raw scores for combined emotions. Percentages in brackets.

	Child's Emotions		Adult's Emotions		Total	
Age	Possible	Denial & nul resp.	Possible	Denial & nul resp.	Possible	Denial & nul resp.
4	72	36 (50%)	72	42 (58%)	144	78 (54%)
6	72	21 (29%)	72	27 (37%)	144	48 (33%)
8	72	5 (7%)	72	21 (29%)	144	26 (18%)
10	72	13 (18%)	72	13 (18%)	144	26 (18%)
12	72	3 (4%)	72	9 (12%)	144	12 (8%)

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There is a steep decline in the number of responses which deny or profess ignorance or fail to provide instances of the emotion as the child gets older. The steepest gradient is between 4 and 6 and this probably reflects an increased ability to deal with interrogation discourse, as well as increasing experience and better organisation of memory. However, as will be seen in the next table, there are some of the six emotions which appear less familiar, are probably less frequent in experience, and so provide greater problems of memory search in providing instances unless or until direct or vicarious experience enables some degree of generalisation. There were fewer instances of adult experience at all ages though the difference for the 10 & 12 year olds is very small.

Denial practically drops out in the older children (8 instances: 6 in jealousy, one in pride, and one in fear). By this age response is mainly affected by failure to provide instances.

Table 8 shows that the tendency to deny or not to be able to provide instances of emotions grows as the emotions become more complex and more dependent on social rules and social expectations which the younger children have as yet not fully mastered. As the children's identification of the emotion in the stories shows, pride was almost exclusively identified with happiness, and anger, happiness, sadness and fear appear to be 'basic emotions'. Shame and jealousy cause more difficulty. One exception to this is the heavy denial of the experience of sadness by the 4 year olds. Shields and Duveen (1983) found that the younger children of their sample did not seem to distinguish anger and sadness, attributing the same causes to both, though by 5 distinctions were beginning to appear within a general 'upset state'. It may be the same undifferentiated 'upset state' which accounts for the 4 year olds' difficulties with sadness, but it may also be that bereavement which is the main attributable cause of sadness from 6 years on is not part of their experience, or is mitigated for them by their parents.

Denial of emotion either in their own experience or in their observed experience was twice as common as responses of don't know and no instance - there were 125 instances of denial as opposed to 62 of the other categories. This may mean that there is a repressive mechanism working to render memories of unpleasant emotion less accessible, but it may also reflect the shelter afforded to children, and also the low incidence of unpleasant emotions other than anger in their environment generally, except in media drama.

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Table 8. The incidence of responses of denial, don't know and failure to provide instances by emotion

	Anger			Pride			Sadness			Fear			Shame			Jealousy		
child/adult	C	A	T	C	A	T	C	A	T	C	A	T	C	A	T	C	A	T
Age 4	2	2	4	3	4	7	10	9	19	4	5	9	7	10	17	10	12	22
6	2	1	3	1	5	6	2	2	4	6	7	13	4	5	9	6	7	13
8	0	0	0	0	1	1	0	2	2	1	3	4	1	6	7	3	9	12
10	0	0	0	2	0	2	2	0	2	0	3	3	5	2	7	4	8	12
12	0	0	0	0	0	0	0	1	1	0	1	1	3	4	7	0	3	3
Total	4	3	7	6	10	16	14	14	28	11	19	30	20	27	47	23	36	59
% from 120 responses			6%			13%			23%			25%			39%			49%

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The differences in children's responses to the different emotions is also reflected in their ability to produce positive instances of situations which caused them to feel each emotion. In Table 9 the inverse gradient to that shown in Table 8 appears. Anger is by far the best producer of plausible instances. On average each child respondant produced 4.4 instances whereas Pride (average 3.4) Sadness (3.2) and Fear (3.2) are not far behind. Shame (2.2) and Jealousy (2.2) have a bare minimum response rate, totally lacking the fluency of the children discussing anger.

The variety of children's experiences of emotion

The variety of personal and observational experience, especially in familiar emotions is considerable, and naturally forms a similar picture to the data in the previous section. One difficulty in presenting it is caused by the level of categorisation, where a category between the superordinate of, say anger and the detail of the individual anecdote has to be chosen. If anger is categorised by whom it is directed against, there are only five categories in the child's experience: parents, siblings, other adults (curiously enough not teachers), peers and self. In the case of adults there are also five: children, other family members, other adults, self and circumstance, and combinations between the last three e.g. getting the sack, being struck off the register at college, the cooker blowing up, etc. If, on the other hand, anger is categorised by what people get angry about, the categories multiply although there are groups of similar instances, e.g. damage to possessions, fighting and injury. Eventually a light categorisation was used based mainly on the theme of the angry instances. In the case of children's anger, many of the themes e.g. breach of property rules (taking without asking) are common to both sibling and peer group, and these were combined. This isolated a group of occasions for anger which were unique to the peer group, and also mentioned only by children of 10 and 12, namely: name calling, ignoring and excluding, showing off, bossing, letting down and private jokes. These express the rubs of coping with the social life of the peer group when relationships become more important in the building of self concept.

Adult anger was inflated by a probe used during the interview. The children's first impulse was to instance adult anger with children and they were then asked whether adults got angry about anything else besides children. This drew on a vast array of observed adult anger in uniquely specified contexts ranging from adultery, burglary and bag snatching to irritation when their football team lost

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Table 9. The number of different categories of contextualised instances of emotion felt by the children themselves or observed in adults. Raw scores.

Emotions	Categories of situation	Age				
		4	6	8	10	12
Anger						
Child	29	8	13	11	14	17
Adult with child	18 — 47	5 — 7	5 — 16	10 — 19	6 — 17	12 — 24
Adult	29	2	11	9	11	12
Sadness						
Child	20	2	12	8	9	11
Adult	21	3	8	6	8	13
Fear						
Child	18	8	8	10	9	11
Adult	22	5	8	11	8	9
Pride						
Child	13	3	5	7	5	7
Adult	22	3	7	7	6	8
Shame						
Child	10	5	5	6	3	6
Adult	10	2	6	2	5	5
Jealousy						
Child	7	2	6	4	3	6
Adult	7	0	2	3	3	4
Total	226	48	96	94	90	121

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a game. Although anger with children provided the most numerous set of instances (77), these fall into 18 categories, whereas the 56 instances of observed adult anger provide 29 distinct themes even after placing family arguments of all kinds including arguments about driving and about money or mother daughter disputes in one category.

The problems of categorisation which arise in the case of anger also arise for the other emotions. For instance to include instances of breaking a vase, throwing an insufficiently extinguished match into a wastepaper basket, and hiding one's uncle's oars and being unable to find them again because the rain has washed away the marker, all in a single category of loss or damage to property for which the child felt guilt or shame illustrates the sacrifice of individual experience which such categorisation entails. Enough, however, remains to show the relative spread of experience as between emotions, and also the proportion of the different categorised emotional situations mentioned by each age group. In general the picture is the same as that shown in other parts of the data, a sharp and significant rise in the variety of instances between 4 and 6, a levelling off between 6 and 10 and then another sharp rise between 10 and 12. The 4 year olds are in a nursery school where they have recently emerged from the protective environment of home. They are aware of anger and fear, but sadness they find difficult to instance specifically and the negative emotions appear to be poorly discriminated as yet. Pride in achievement is also unfamiliar and only emerges as school experience introduces them to competition. The older children provide much fewer categories of pride in achievement for children than for adults, reflecting the narrower sphere of children's activities.

Do these data support the existence of a latency period between 6 & 10?

One notable feature of the results for all three tasks, both the photo-task, the story task and the accounts of the child's experience is a sharp rise in response rate and response accuracy between 4 and 6 and between 10 and 12 years for nearly all tasks with a levelling off between the ages of 6 and 10. The two rises may be the effect of transitional periods in the child's experience caused by entry into infant school and secondary school respectively with the attendant impetus to the reorganisation of relationships and thinking and the entry into new modes of discourse.

The levelling off between 6 and 10 may be due to the absence of such transitions, but it may also be due to latency in emotional growth and in the

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development of emotional understanding. The 6 year olds in this sample are armed with a good knowledge of both emotional expression and the common emotions encountered in their daily lives and this working knowledge may suffice until the combined effects of puberty and the transition to secondary school effect dramatic changes. More research on a larger sample within a wider environment and using more refined methods of investigation would be needed to establish such a period of latency.

Comparison of story tasks and photo-tasks

24 children in each age group performed all five tasks, that is, comprehension and labelling of photographs, situational labelling of a story task, and providing instances of their and of adults' experiences of the emotion. A comparison for three emotions - anger, sadness and fear is given below. (As the interpretation of the shame story was complex, it was left out of this analysis.)

The five tasks were compared by giving a score of 1 for success and 0 for failure to each child for each task. In respect of the photographic tasks, the score was for comprehension or labelling of the one photograph displaying the emotion under consideration. Comparison of success on each task for each emotion showed significant differences according to tasks (by Cochran's Q, $p < 0.05$). Paired comparisons showed that, in relation to anger, the children were more likely to attribute anger to the story character and to give instances of situations provoking anger than to comprehend or label anger in the photograph. For fear, the children were least successful with the labelling task, and for sadness they were most successful with the story (McNemar's test, $p < 0.05$). In general, taking anger, sadness and fear together, the children were most successful at the story task, next at citing instances of both their own and adults' experiences of emotion, and least successful at labelling and comprehending photographs of expressions.

Table 10. Comparison of children's performance on 5 tasks in relation to 3 emotions. Percentages of children correctly performing each task (N = 60)

	Anger %	Fear %	Sadness %	Average %
Labelling	70	35	83	63
Comprehension	60	65	63	63
Story	92	77	92	87
Child instances	92	82	75	83
Adult instances	97	68	73	79

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Summary

1. The recognition of emotion in photographs

The degree to which development can be said to take place in the photo-recognition tasks depends both on the emotion and the task. In general, the labelling of expressions without verbal clue, though better than chance, is less good than cued recognition at all ages. The number of correct responses accelerates between 4 and 6 years and thereafter the curve of increase flattens, the 12 year olds and adults being only slightly better than the 6 year olds. Skill in cross matching expressions rises slowly until the age of 10 and then accelerates between 10 and 12, with the 12 year olds showing near adult proficiency. In the comprehension task where recognition is cued verbally there are two acceleration points in development, between 4 and 6 and between 10 and 12.

2. The recognition of emotion in stories

Children's recognition of emotion contextualised by stories showed that even the youngest children could identify either the target emotion or a main component of the target emotion in the case of anger, sadness, disgust, pride and sympathy. Fear was not well differentiated from sadness (5 responses) and anger (5 responses) by the 4 year olds and this may show the persistence of an undifferentiated 'upset state' at this age. Two emotions showed change over age, - disgust and sympathy. Disgust appeared to attenuate from the primitive revulsion syndrome still predominant at 4 and 6 and diffuse towards anger and surprise as the children got older. Sympathy which was initially an empathic response to the accident of a friend became more heavily laced with active helping at 12 years. Shame and guilt were not first choices in response to the false accusation story by the majority of children under 12, though a majority at each age were prepared to accept it as a possible emotion in the circumstances. The emergence of guilt and shame at 12 seems to show the emergence of a commitment to behavioural standards not apparent in the younger children. Jealousy was interpreted as anger and sadness and does not appear to be an emotion suae generis. The development in the definition of this emotion probably lies in the cognitive realm in an understanding of social relationships and the rules and expectations which govern them in the culture.

Development in the understanding of stories lay in the greater complexity of the older children's responses and their greater understanding of ambivalence and emotional blends.

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3. Children's accounts of occasions of emotion in themselves and adults

There is a considerable development in fluency of recall and example giving over age. The stepped gradient between 4 and 6 and 10 and 12 once more appears. The younger children, the 4 year olds and some 6's were disposed to deny that they or adults felt certain of the emotions and half the 4 year olds did not give examples, but this tendency varied for different affects, sadness, shame and jealousy provided fewest occasions for recall. Pride and anger were least affected.

In addition to the greater fluency with age, the range and variety of instances of emotion also increased, and the adult examples contain more variety than the child examples, especially in anger and pride.

Discussions

This study maintains the grounding of emotion in the appraisal of situations and indicates that an understanding of situation increases with the growth of experience. Some recent studies of children's understanding of emotion have tended to trace development as a transition away from a situation dominated notion to one based on inner mental factors. (Harris et al 1981, Harris & Olthof 1982.) It may be that older children are more aware of inner psychological factors in emotion, but it would be a mistake to link development to a substitution of internal mental factors for situated emotion. It might be wise to consider children's understanding of emotion as the development of more complex schemata in which both situation and internal factors such as personal history, disposition and mood are taken into joint account. Unsituated emotion would not normally be considered an advanced index in personality development, and a mental model of emotion which demotes situation is unlikely to be serviceable in real life when a knowledge of the kinds of situation which provoke emotional reactions would be an important component of social skill.

If the growth in children's understanding of emotion as an organised construct is to be investigated seriously both their knowledge of situational factors and their knowledge of internal psychological factors would have to be considered together to see if and how these factors change with age and how they interact. A conversational interview interlaced with specific tasks would seem to be the best approach, and the age range 4-12 with a possible extension to 14 would be a suitable age range. It is important that a broadly based approach should be employed to counteract the 'bittiness' of much of the current research, and to provide some ground for tackling the theoretical confusion which is still endemic in the study of this important topic.

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